AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended) A reaction apparatus comprising a heat exchanger ~~5~~ and a reactor ~~1~~ with a heater ~~2~~, which are enclosed in an outer casing ~~6~~;

wherein the heat exchanger has a first end and a second end, ~~the top~~ whereby the first end of the heat exchanger ~~5~~ being connected to the reactor ~~1, the other end part~~ and the second end of the heat exchanger ~~5~~ and ~~the~~ a bottom of the outer casing ~~6~~ being fixed to each other by a flange ~~4~~, and a double piping ~~7~~ having an inner tube and an outer tube, for introducing a gas to be treated and for discharging the treated gas, wherein the double piping is being connected to the ~~other~~ second end ~~part~~ of the heat exchanger ~~5~~, such that ~~the~~ gas passes through the heat exchanger 5, the reactor 1 and the heat exchanger 5 in this order during ~~the~~ a process from introducing gas through one of the inner tube and the outer tube in the double piping to discharging the gas through the other tube of the inner tube and the outer tube.

2. (Currently amended) The reaction apparatus as claimed in claim 1, wherein the heat exchanger ~~5~~ is a shell and tube-type heat exchanger.

3. (Currently amended) The reaction apparatus as claimed in claim 1, wherein the outer casing ~~6~~ has an eyebolt fixing part ~~9 on the ceiling part, thereby the outer casing 6 is detachable~~ for detachably engaging the outer casing to the reactor.

4. (Currently amended) The reaction apparatus as claimed in claim 1, wherein the reactor ~~1~~ has fins ~~13~~ in the inside thereof.

5. (Currently amended) The reaction apparatus as claimed in claim 1, wherein at least one fins ~~13~~ ~~are~~ is provided inside the inner tube ~~7a~~ in the double piping ~~7~~ and/or between the inner tube ~~7a~~ and the outer tube ~~7b~~ in the double piping ~~7~~.

6. (Currently amended) The reaction apparatus as claimed in claim 1, comprising a mechanism where the gas to be treated is introduced through the inner tube ~~7a~~ and discharged through the outer tube ~~7b~~.

7. (Currently amended) The reaction apparatus as claimed in claim 6, wherein the outer tube ~~7b~~ of the double piping ~~7~~ has a heat radiating plate.

8. (Currently amended) The reaction apparatus as claimed in claim 1, wherein the reaction apparatus is adapted to be installed horizontally and the reactor ~~1~~ with a heater ~~2~~ and the heat exchanger ~~5~~ are placed horizontally with respect to each other.

9. (Currently amended) A reaction method comprising the steps of:

introducing a gas to a double piping, wherein the double piping has an inner tube and an outer tube;

passing ~~a~~the gas to be treated sequentially into one tube of the inner tube ~~7a~~ and the outer tube ~~7b~~ in ~~a~~the double piping ~~7~~, a heat exchanger ~~5~~, a reactor ~~1~~ with a heater ~~2~~, the heat exchanger ~~5~~ and the other tube of the inner tube and the outer tube in the double piping ~~7~~ in this order; and

heating the gas to be treated by the heater ~~2~~ before the gas to be treated is introduced into the reactor ~~1~~, thereby adjusting ~~the~~ temperature difference in ~~the~~ a gas flow direction inside the reactor ~~1~~.

10. (Currently amended) The reaction method as claimed in claim 9, wherein the gas to be treated is introduced through the inner tube ~~7a~~ of the double piping ~~7~~ and discharged through the outer tube ~~7b~~.

11. (Original) The reaction method as claimed in claim 9 or 10, wherein the temperature difference is adjusted to 50°C or less.